Robbinsville School District
Honors Geometry Summer Assignment

Welcome to Honors Geometry! On the following pages you will find your summer assignment for the upcoming 2020-2021 school year. The summer assignment reviews algebraic and geometric material that you have learned in Algebra 1, Algebra 2 and other previous courses. The packet is to be completed. **It will be collected for a grade and is due on the first day of school.**

To assist in your review and completion of this packet there are videos corresponding to each section of this packet. The videos are linked into this packet using QR codes that look like this:

In order to view the videos, simply download a QR scanner to your phone, use the scanner to scan the code, and that will directly link you to each video.

Many of the links are from the website: www.showme.com/RHS-Math

If you find yourself still confused on certain topics, it is suggested that you search for the topic on one of the following websites:

- ShowMe http://www.showme.com

- Khan Academy: http://www.khanacademy.org/Math

- Math TV: http://www.mathtv.com

For Section 3, Algebra 2 Honors Trigonometry Review, students should use class notes from last year. Algebra 2 CP students will not have learned Trigonometry yet and should try to watch some videos online.

Directions: **You must also show all work in the space provided to receive credit.**
Write your final answer on the line.

Part 1: PreSkills from Algebra 1 and Algebra 2s

Solve. Keep all answers in <u>exact</u> <u>form</u>, where applicable.

1. $-3(x + 5) = 8x + 18$ 1._____

2. $4(8 - p) - (7 - p) = 22$ 2._____

3. $5(x - 4) - 1 = -7x + 3$ 3._____

4. $\dfrac{5}{x + 1} = \dfrac{6}{x^2 - 2x - 3} + \dfrac{?}{?}$ 4._____

5. $\dfrac{v - 6}{2v^2 + 2v - 4} + \dfrac{v}{2v - 2}$ 5._____

6. $x^2 - 16x + 64 = 0$ 6._____

7. $25y^2 - 49 = 0$ 7._____

8. $2x^2 = 9x + 5$ 8. _____

9. $16x^4 - 121x^2 = 0$ 9._____

10. $2x^4 - 12x^2 = 0$ 10._____

11. $3xy - 15y = 0$ 11._____

12. $3x^2 - 10x + 5 = 0$ 12._____

13. $2x^2 - 3x - 11 = 0$ 13._____

14. $-x^2 - 2x + 2 = 0$

14._____

Simplify.

15. $\left(2x^2 + 11xy - 10\right) + \left(3x^2 - 4x + 2\right) + \left(-x^2 - y - 4\right)$

15._____

16. $\left(2x^2 + 5x - x^3 + 1\right) - \left(9x^2 - 8x - x^3 + 7\right)$

16._____

17. $(4a + 5c)(4a - 5c)$

17._____

18. $(w - 2)^2$

18._____

Solve each system. (Substitution method) (Elimination Method)

19. $\begin{aligned} y &= -x + 3 \\ y &= x - 3 \end{aligned}$

19._____

20. $\begin{aligned} 2x - y &= 5 \\ x - 2y &= 10 \end{aligned}$

20._____

21. $x + y = 0$
    $x + y = 2$

21._____

Graph the Functions.

22. $y = -3x + 5$
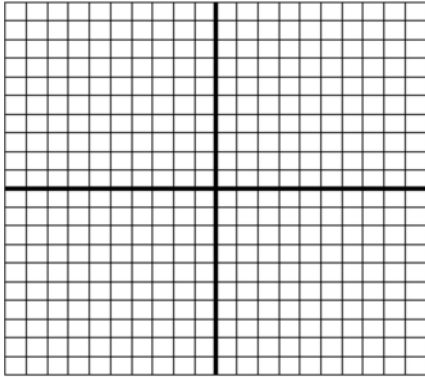
23. $y = \frac{3}{4}x - 2$
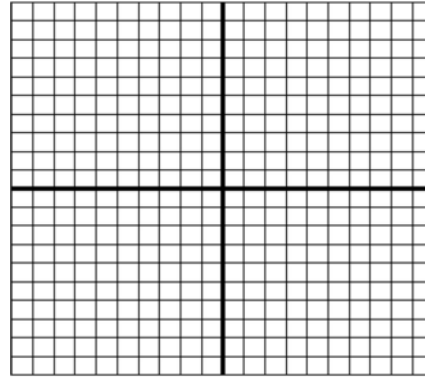
Find the Slope.

24. Find the slope of the line containing points (9, 4) and (5, 2)

24._____

25. Find the slope of the line containing points (-2, 3) and (8, -15)

25._____

Rationalize each denominator. When possible, simplify by reducing the resulting fraction. (#26 - 30)

26. $\dfrac{2}{\sqrt{3}}$

26._____

27. $\dfrac{1}{\sqrt{8}}$

27._____

28. $\dfrac{6}{\sqrt{18}}$

28._____

29. $\dfrac{15}{\sqrt{50}}$

29._____

30. $\dfrac{42}{\sqrt{7}}$

30._____

For # 31 – 35, simplify.

31. $\sqrt{121}$

31._____

32. $\sqrt{32}$

32._____

33. $\sqrt{75}$

33._____

34. $\sqrt{80}$

34._____

35. $\sqrt{288}$

35._____

Factor.

36. $3x^2 + 23x + 40$

36._____

37. $4x^2 - 27x + 18$

37._____

Solve by factoring.

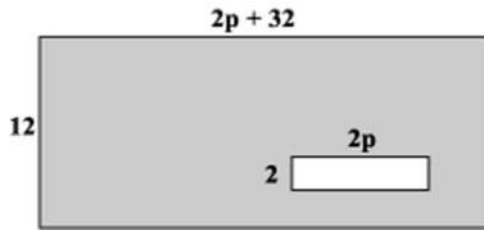38. $15x^2 - 12x - 36 = 0$

38._____

39. $2x^2 + 7x = 30$

39._____

Part 2: Geometry Skills
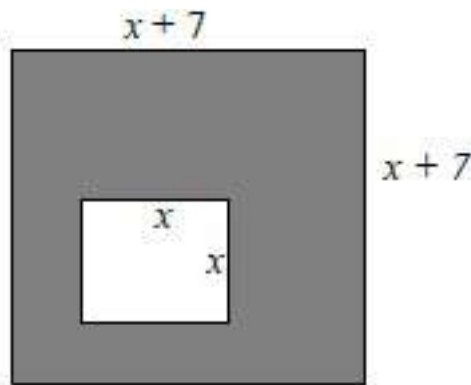
Solve for the missing variable in each figure.

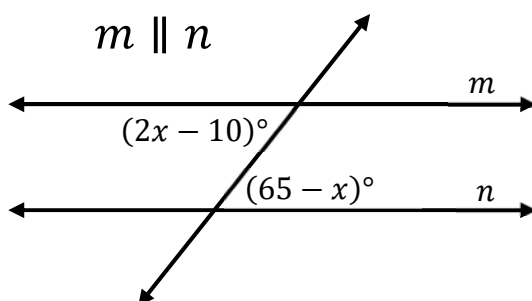40. What is the simplified expression for the area of the shaded region in the larger of these two rectangles?

2p + 32

12

2p

2

40._____

41. What is the simplified expression for the area of the shaded region in the larger of these two rectangles?

41._____

$x + 7$

$x + 7$
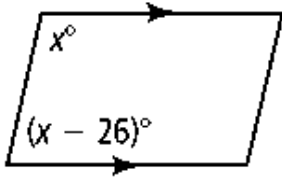
x

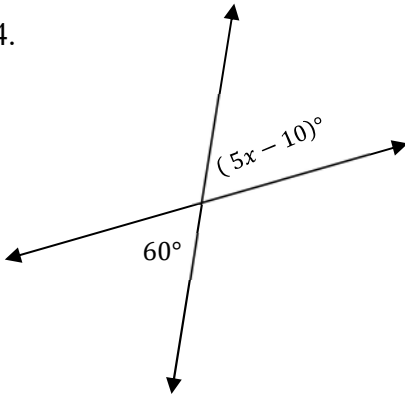x

42.

$m \parallel n$

m

$(2x - 10)°$

$(65 - x)°$

n

42._____

7

43.

$x°$

$(x - 26)°$

43._____

44.

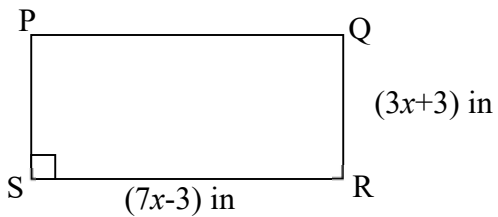$(5x - 10)°$

60°

44._____

45.

$x°$

$(2x + 6)°$ $(2x - 6)°$
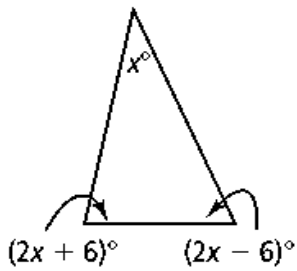
45._____

46. If the perimeter of rectangle PQRS is 40 inches.
   a) Find the value of x.

   b) Find the Area of the rectangle.

46a._____

46b._____

P   Q

$(3x+3)$ in

S $(7x-3)$ in   R

**Solve each word problem. Keep answer in <u>simplest radical form</u>.**

47. Joe Bean regularly takes a short cut across Mr. Wilson's lawn instead of walking on the sidewalk on his way home from school. Based on the picture below, how much distance is saved by Joe cutting across the lawn?

47._____

sidewalk
15 feet

sidewalk
20 feet

48. Skylar leans a 10m ladder against a building. If she is 5m away from the base of the building, what height does the ladder reach on the building?

48._____

10 m

h

5 m
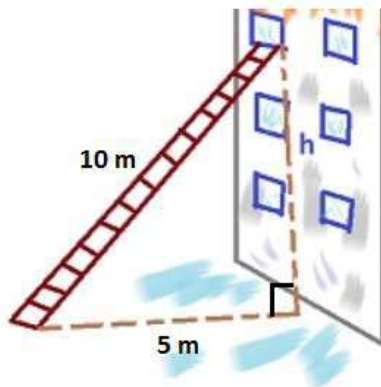
49. Your new iPad is 7 inches tall and 6 inches long, what is the diagonal display of the iPad screen?
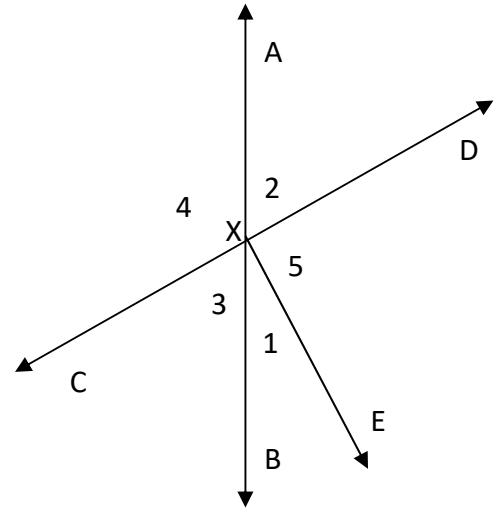
49._____

7 inches

6 inches

50. Given the figure below in which $\overrightarrow{AB}$ and $\overleftrightarrow{CD}$ intersect at point X and m∠5 = 90∘.

Refer to angles by numbers in answering.

a) Name a pair of vertical angles.

b) Is ∠1 vertical to ∠2? Explain.

c) Name an angle adjacent to ∠2.

d) Are ∠3 and ∠5 supplementary?

e) Are ∠2 and ∠4 supplementary?

f) Explain why ∠3 and ∠1 are complementary.

Part 3: Preskills from Algebra 2 Trigonometry Units

Students should use their class notes from last year's Algebra 2 Honors class to complete this section.

51. Fill-in the attached blank unit circle. Use the Unit Circle to evaluate the following trigonometric expressions.

Exact values only – no decimals.

a. $\sin 150° =$
b. $\sec 300° =$
c. $\tan \frac{\pi}{2} =$
d. $\cos \frac{7\pi}{4} =$

e. $\cot -150° =$
f. $\csc 300° =$
g. $\cot \frac{3\pi}{2} =$
h. $\sec \frac{7\pi}{4} =$

For each angle, use same angle measure to identify the coterminal angle between [0,360) or [0,2π), the quadrant and/or axis that its terminal side lies, the reference angle, and the equation for every coterminal angle. Then, sketch the original angle and convert the original angle to degrees/radians.

52.   -945°

Coterminal Angle:_____

Quadrant and/or axis_____

Radian:_____
Reference Angle:_____

Equation for every coterminal angle

_____

53. $\frac{15\pi}{4}$

Coterminal Angle:_____

Quadrant and/or axis: _____
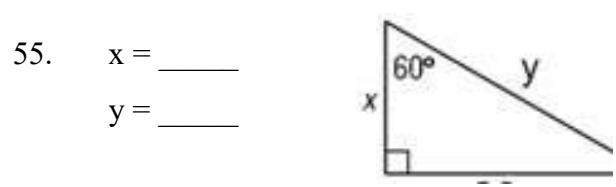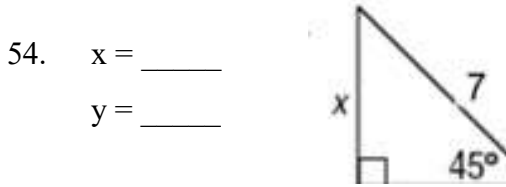
Degree:_____
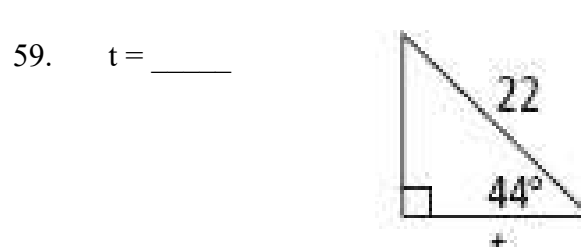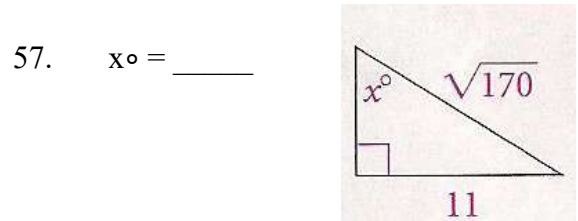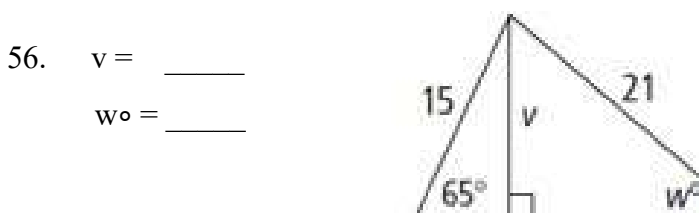Reference Angle:_____

Equation for every coterminal angle:

_____

For each special right triangle, find the value of x and y in each figure in radical form. No decimals!

54.   x = _____

       y = _____

55.   x = _____

       y = _____

For each right triangle, find the value of the side(s) or angle requested in each figure. Round both sides and angles to nearest tenth as needed.

56.   v = _____

       w° = _____

57.   x° = _____

58.   t = _____

59.   t = _____

60. Determine the exact values of the six trigonometric functions if the point (10, -8) lies on the terminal side of θ. **Rationalize your answers, if applicable.**

Show your work here:

$\sin \theta =$ _____ $\csc \theta =$ _____

$\cos \theta =$ _____ $\sec \theta =$ _____

$\tan \theta =$ _____ $\cot \theta =$ _____

Unit Circle

Positive:
Negative:

Positive:
Negative:

(__ , __)

(— , —)

(— , —)

(— , —)

(— , —)

(— , —)

(— , —)

(__ , __)

(__ , __)

(— , —)

(— , —)

(— , —)

(— , —)

(— , —)

(— , —)

(__ , __)

Positive:
Negative:

Positive:
Negative: